TETRA TECH, INC.

January 20, 2023

Nicole Yuen
California Department of Toxic Substances Control
700 Heinz Avenue, Suite 200C
Berkeley, California 94710

Via email: Nicole.Yuen@dtsc.ca.gov

Subject: Notification of Piezometer DHR Abandonment, Revised
Richmond Field Station, UC Berkeley

Dear Ms. Yuen:

During the October 2022 groundwater levels monitoring event, piezometer DHR was discovered to have been destroyed by Richmond Field Station (RFS) staff inadvertently during nearby stormwater maintenance activities. DHR is located in the southwestern portion of RFS, between piezometers B278-R, CCC2, and B128. The top 2 feet of the piezometer were destroyed and removed, and the remaining portion remains in place. This letter addresses comments received from DTSC dated January 4, 2023, and replaces the original notification letter dated December 16, 2022. DTSC comments are included as Attachment A.

Piezometer DHR consists of a 2-inch PVC piezometer with a depth of 14 feet below ground surface (bgs), screened from 3.5 to 13.5 feet bgs. The piezometer will be abandoned and decommissioned according to Contra Costa County Health and Safety Division "Annular Seal and Well Destruction Materials" specification. The piezometer will be over-drilled, removed, and the entire borehole will be grouted. The piezometer materials removed will be drummed as investigation-derived waste (IDW).

Permits will be requested prior to abandonment and a copy of the Well Driller's Report will be submitted to Contra Costa Environmental Health and the State Department of Water Resources so that UC Berkeley can receive final destruction approval.

UC Berkeley does not propose to install a replacement piezometer for DHR, which is a replacement for the original DH, which was no longer usable due to intruding roots in 2013. DH was installed in 2010 to help determine if groundwater impacts were caused by a reported explosion at the former California Cap Company Dry House. Perchlorates, polyaromatic hydrocarbons, and explosives residue were added to the list of target analytes for laboratory analysis at DH. Groundwater results from four concurrent monitoring events did not indicate evidence of contamination from an explosion and those analytes were discontinued. Under the current groundwater monitoring program, DHR is scheduled for sampling every other year for metals only.

Results from DHR are not critical and do not impact any ongoing groundwater monitoring efforts, as DHR is surrounded by four nearby piezometers: B278-R to the northwest, CCC2 to the east, B128 to the south, and EPA to the west. All piezometers are shown on the attached figures which represent the most current wet and dry season groundwater elevation contours from the 2021 Groundwater Sampling Results, Technical Memorandum, dated June 6, 2022.

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Tel 510.302.6300 Fax 510.433.0830
www.tetratech.com

If you have any questions or comments regarding this submittal, please call me at (415) 497-9060 or Alicia Bihler at (510) 725-2528.

Sincerely,

Jason Brodersen, PG
Program Manager

cc: Alicia Bihler, UC Berkeley EH&S

Attachments: Figure 23 Shallow Groundwater Elevation Contours, October 5, 2020
Figure 24 Shallow Groundwater Elevation Contours, April 5, 2021
Attachment A. Regulatory Comments

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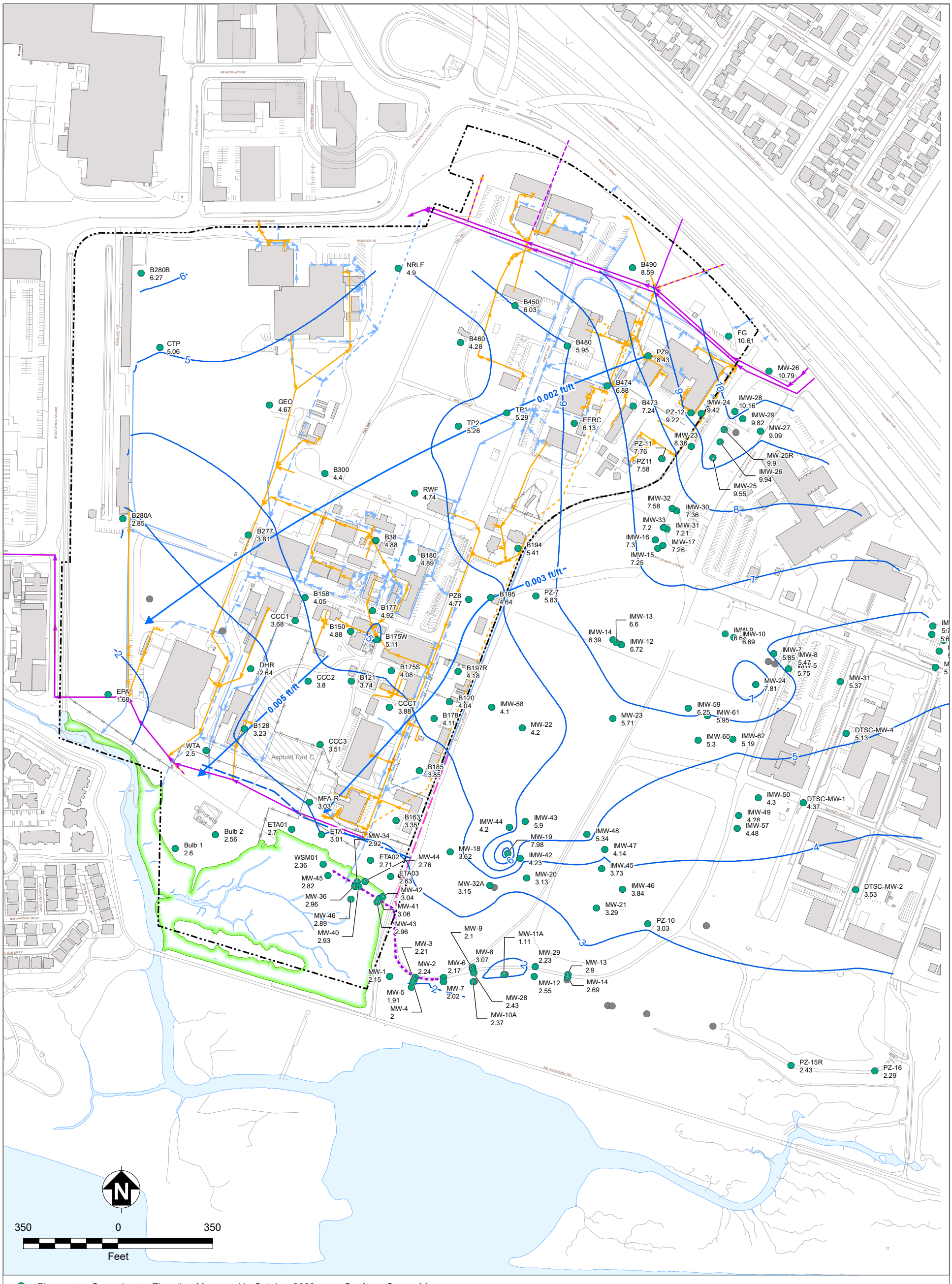

- Piezometer Groundwater Elevation Measured in October 2020
- Piezometer Groundwater Elevation Not Measured in October 2020
- Estimated October 2020 Groundwater Contour
- Estimated Horizontal Groundwater Gradient Direction (Value)
- Existing Building
- Asphalt/Concrete Pad
- Surface Water
- Marsh Boundary
- Richmond Field Station Site Boundary
- Roads and Other Landscape Features
- Fenceline
- BAPB Wall
- Former Seawall (Approximate)
- Slurry Wall

Sanitary Sewer Lines:

- Existing City of Richmond Sewer
- Abandoned City of Richmond Sewer
- Existing RFS Sewer
- Abandoned RFS Sewer

Storm Drain Lines:

- Open Swale
- Underground Culvert
- Gutters
- Underground Culvert, Abandoned (Grouted at Manholes)

MW-10A
5.27
Piezometer ID
Groundwater Elevation (FT NGVD29)

Note:
All data points surveyed to NGVD29.
Mean sea level = NGVD29 elevation (in feet) – 0.58 feet and mean sea level datum representative of Stege Marsh is derived from NOAA Richmond Inner Harbor tide gauge.

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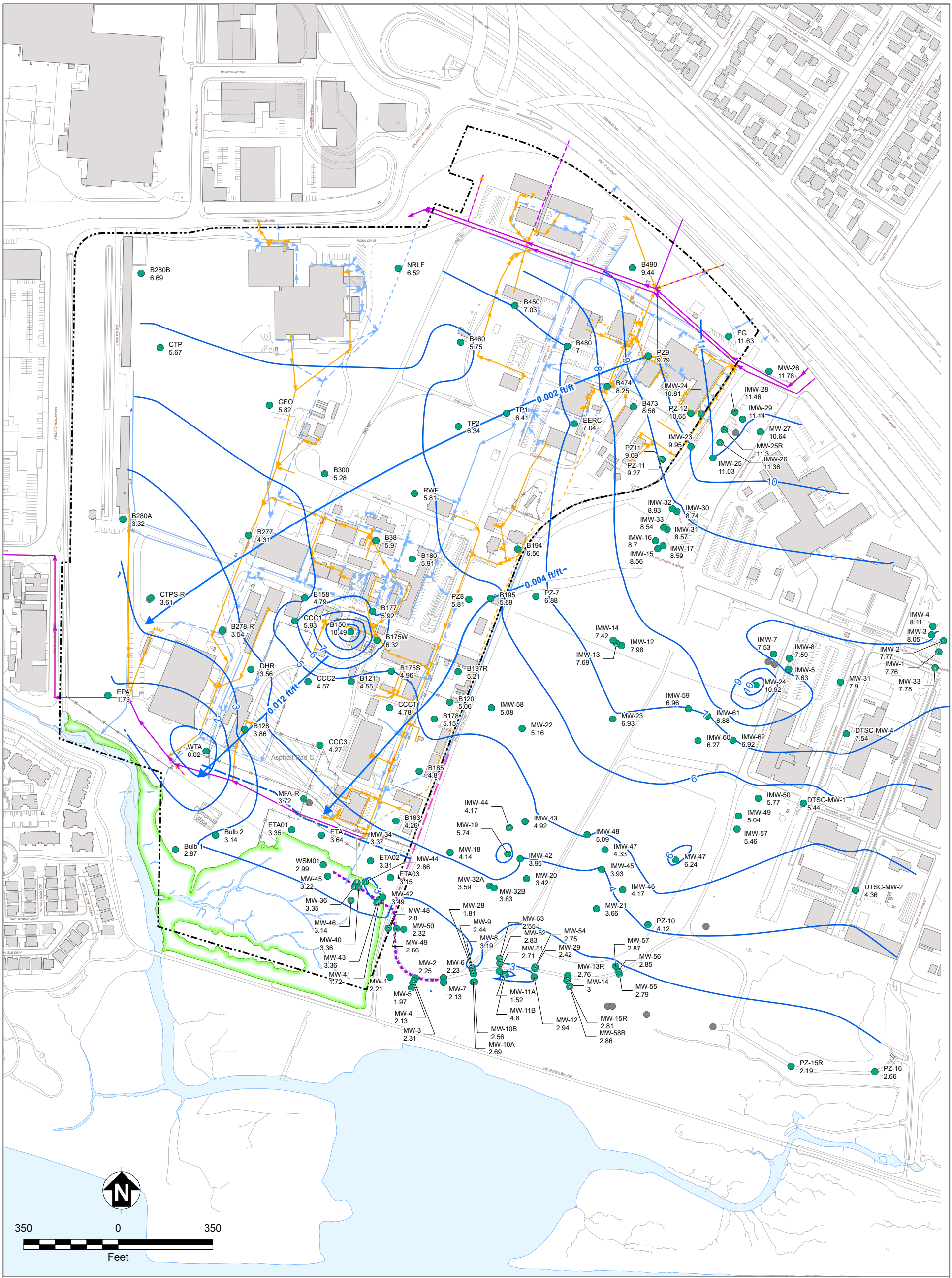
Richmond Field Station Site
University of California, Berkeley

FIGURE 23
SHALLOW GROUNDWATER ELEVATION CONTOURS, OCTOBER 5, 2020



- Piezometer Groundwater Elevation Measured in April 2021
- Piezometer Groundwater Elevation Not Measured in April 2021
- Estimated April 2021 Groundwater Contour
- Estimated Horizontal Groundwater Gradient Direction (Value)
- Existing Building
- Asphalt/Concrete Pad
- Surface Water
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Richmond Field Station Site
University of California, Berkeley

FIGURE 24
SHALLOW GROUNDWATER ELEVATION CONTOURS, APRIL 5, 2021

ATTACHMENT A

REGULATORY COMMENTS

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
700 Heinz Avenue
Berkeley, California 94710-2721

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

M E M O R A N D U M

TO: Nicole Yuen, Project Manager
Senior Environmental Scientist
Cleanup Program, Berkeley Office
Site Mitigation and Restoration Program

FROM: Mark Sorensen, PG 7448
Engineering Geologist
Geological Services Branch – Berkeley
Site Mitigation and Restoration Program

DATE: January 4, 2023

SUBJECT: **REVIEW OF NOTIFICATION OF PIEZOMETER DHR ABANDONMENT, RICHMOND FIELD STATION, UNIVERSITY OF CALIFORNIA, BERKELEY**

SITE 201605-11 PCA: 11018 MPC: TECHMEMO WR 20092109

DOCUMENT REVIEWED

As requested, the Berkeley Geological Services Unit (GSU) has reviewed the *Notification of Piezometer DHR Abandonment, Richmond Field Station, UC Berkeley, Richmond Field Station, University of California, Berkeley* (Letter), dated December 16, 2022. The Letter was prepared by Tetra Tech, Inc., and was reviewed with respect to geologic and hydrogeologic interpretations and technical adequacy.

BACKGROUND

Piezometer DHR (a replacement for piezometer DH) was discovered to have been destroyed by Richmond Field Station (RFS) staff inadvertently during recent stormwater maintenance activities. The remaining portion of the piezometer will be over-drilled, removed, and the entire borehole will be grouted, according to Contra Costa County specifications, with piezometer materials removed and drummed as investigation-

derived waste. The Letter discusses past sampling results from this piezometer, and proposes that it not be replaced.

COMMENTS AND RECOMMENDATIONS

1. The second sentence of the Letter mentions a piezometer B201 being near piezometer DHR, which is not helpful in that there is no such piezometer shown on either Figure 23 or 24. Also, note that piezometer DHR is located more in the southwesterly portion of RFS than in the southeast. Please edit appropriately to more clearly describe the location.

2. The fourth paragraph states that groundwater sampling results at the DH/DHR location for perchlorates, polyaromatic hydrocarbons, and explosive residues from four concurrent monitoring events (in 2010-2012) did not indicate evidence of contamination from an explosion, and that those analytes were discontinued from subsequent monitoring events. Metals were the only analytes in subsequent events at DHR. We note that there have been detections of arsenic above screening levels in a minority of sampling events. These detections at DHR do not appear to indicate a plume of arsenic contamination, considering that all the nearby surrounding sampling locations of B278-R, B158, CCC1, CCC2, B128, WTA, and EPA have not shown patterns of arsenic exceeding screening levels. Thus, we concur with the recommendation that piezometer DHR not be replaced.

3. In the fifth paragraph, please edit the sentence as indicated:

   > "Results from DHR are not critical and do not impact any ongoing groundwater monitoring efforts, as DHR is surrounded by four nearby piezometers: ~~B278~~ **B278-R** to the north, CCC2 to the ~~west~~ **east**, B128 to the south, and EPA to the ~~east~~ **west**."

The proposed piezometer abandonment and disposal methods appear appropriate, and I support DTSC approval of the Letter once Comments 1 and 3 above are addressed.

If you have any questions or comments regarding this memorandum, please contact Mark Sorensen at (510) 540-3947 or Mark.Sorensen@dtsc.ca.gov, or Jon Buckalew (Buck) King at (510) 540-3955 or Buck.King@dtsc.ca.gov.

Reviewed by: Alex Woodward, PG
Engineering Geologist, Geological Services Unit
Geological Services Branch
Site Mitigation and Restoration Program